



**FACULTY OF NATURAL RESOURCES MANAGEMENT AND AGRICULTURE
DEPARTMENT OF ANIMAL PRODUCTION AND HEALTH**

BACHELOR OF SCIENCE HONOURS DEGREE IN ANIMAL SCIENCE

ANIMAL BIOTECHNOLOGY (LAS 4208)

SEMESTER 2 SUPPLEMENTARY EXAMINATION

JUNE 2025

Time Allowed: 3 hours
Total Marks: 100
Special Requirements: None
Examiner's Name: Mr D. Mlilo

Instructions to Candidates:

1. The paper consists of six questions, answer **ALL** questions in **Section A** and **ANY TWO** in **Section B**.
2. Marks for each question are shown in brackets. Where a question has subdivisions, the marks for each subdivision are given.
3. Illustrate your answer, where applicable, with large clearly labelled diagrams.

MARK ALLOCATION

| QUESTION | MARKS |
|-------------------------------|--------------|
| SECTION A | 60 |
| SECTION B | 40 |
| TOTAL ATTAINABLE MARKS | 100 |

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SECTION A: ANSWER ALL QUESTIONS IN THIS SECTION

QUESTION 1

Write short notes on the following:

- i) Probes. [4]
- ii) Single nucleotide polymorphism. [4]
- iii) Pluripotent cells. [4]
- iv) Multipotent cells. [4]
- v) Xenotransplantation. [4]

QUESTION 2

Write short notes on the following breeding technologies:

- i) Semen sexing. [5]
- ii) Multiple ovulation and embryo transfer (MOET). [5]
- iii) In-vitro fertilisation. [5]
- iv) Heat synchronisation. [5]

QUESTION 3

- a) Write short notes on the use of transgenic animals in animal production. [10]
- b) List any **five** requirements for gene (cell based) cloning. [10]

SECTION B: ANSWER ONLY TWO (2) QUESTIONS FROM THIS SECTION

QUESTION 4

With the aid of a diagram if possible, outline the steps followed in producing a transgenic pig. [20]

QUESTION 5

Discuss the possible application of biotechnology in animal health. [20]

QUESTION 6

Discuss the hormonal and non-hormonal oestrous synchronisation. [20]

END OF QUESTION PAPER